

REMARKS

Claims 1, 3 – 12, 14, and 16 – 33 are currently pending. Claims 1, 12, and 21 are the pending independent claims. In the Office Action, all of the pending claims were rejected as allegedly being anticipated by U.S. Patent No. 5,352,276 to Rentschler et al. (“Rentschler”). No other objections or grounds of rejections were raised in the Office Action. The rejections based upon Rentschler are respectfully traversed and favorable reconsideration is requested in view of the above amendments and following remarks.

In general terms, Rentschler discloses a conventional groundwater remediation system in which contaminated groundwater is said to be stripped of its contaminants by bubbling air up through the water while it flows across air-permeable trays of a “stripper column.” This is the type of system Applicants’ invention is intended to improve upon.

In contrast to Rentschler, Applicants’ system does not require a trayed stripper column in which air is bubbled up through water. In a preferred embodiment, Applicants’ technology uses an inline stripper in the nature of a venturi-like device which acts upon a two-phase flow regime including VOC-laden contaminated groundwater to dynamically and rapidly expand the flow, thereby inducing an effective mass transfer of VOC’s from the liquid phase (i.e., the groundwater) to the vapor phase.

More particularly, according to Applicants’ claimed invention, VOC-contaminated groundwater of the liquid phase of the extract is stripped by dynamically flowing the two-phase extract (i.e., both the liquid and vapor phases) concurrently through an orifice of an in-line stripper so that the flow of the two-phase extract is rapidly expanded adjacent a position downstream of the orifice of the inline stripper. A result of this is effective transfer of VOC’s from the contaminated groundwater of the two-phase extract to the vapor phase of the same flow of two-phase extract. This is explained in Applicants’ specification at page 10, lines 3 - 11:

A preferred inline stripper 30 passes the extract fluid through a venturi-like conduit wherein the fluid flow is first constricted and forced through a narrow throat 32 or nozzle-type structure and then caused to expand upon exit from the throat 32 in an expander section. The resultant expansion produces an enhanced degree of turbulence

and mixing in the fluid in the conduit as well as misting when a fluid flow containing an appreciable liquid content passes through the venturi followed by an abrupt expansion and accompanying pressure change. The turbulence, mixing, and misting greatly enlarges the surface area of the vapor liquid interfaces, thereby significantly enhancing the transfer of the volatile contaminants from the liquid phase to the vapor phase.

Use of a venturi-like inline stripper according to the claimed invention eliminates or at least reduces the need for a trayed column stripper as in Rentschler in which air is simply bubbled up through liquid flowing laterally across air-permeable trays.

It will be seen that Applicants' system is entirely different from the system and process used in the Rentschler column. Rentschler does not disclose or suggest the use of a dynamic venturi effect for stripping according to Applicant's claimed invention. In Rentschler's system, "[e]ach tray is separated from the tray immediately below by an air-porous tray bottom member 46 which has a plurality of apertures 48 sized and configured such that water may be flowed thereover without seepage of the water through apertures even under conditions of substantially zero air flow through the apertures." (Col. 8, lines 19 – 25) (emphasis added). The apertures in the trays used by Rentschler are specifically designed not to allow any liquid flow therethrough. In contrast to Applicants' claimed invention, there is no two-phase substantially concurrent flow of VOC-contaminated extract through an orifice. Again, the apertures in Rentschler are dimensioned to pass only air. No flow of water is permitted through the apertures. So, by definition, the apertures of Rentschler cannot be said to concurrently pass a two-phase mixture therethrough, much less dynamically expand any such two-phase flow for VOC separation.

The Rentschler system therefore does not involve a dynamic two-phase flow/expansion process according to Applicants' claimed invention. In fact, the Rentschler system is specifically designed not to permit two-phase flow through an orifice in the manner of Applicants' system. If anything, Rentschler's admonition against permitting liquid flow through the orifices in the plates teaches against the approach taken by Applicants. No person of ordinary skill in the art, reading Rentschler's disclosure, would be led to devise a system for separating VOC's from groundwater in which a two-phase mixture of VOC-contaminated groundwater is flowed or accelerated through an orifice and then rapidly expanded or decelerated to induce an effective transfer of VOC's from the liquid phase to the vapor phase.

Application No. 10/828,843
October 30, 2006

Such a system would go directly against what Rentschler teaches.

Given the profound differences between the invention defined by Applicants' claims and the disclosure of the Rentschler reference, it is respectfully submitted that Rentschler fails to anticipate or suggest Applicants' claimed invention. Applicants therefore urge the Examiner to reconsider the application, to withdraw the rejections, and to issue a Notice of Allowance at the earliest possible convenience.

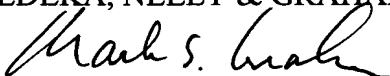
The foregoing is believed to be a fully complete and effective response sufficient to advance this case to allowance and ultimate issuance. However, should the Examiner have any questions concerning this response or wish to discuss any aspect of the application in further detail, he is urged to contact the undersigned by phone.

In the event this response is not timely filed, Applicants hereby petition for the appropriate extension of time and request that the fee for the extension along with any other fees which may be due with respect to this paper be charged to our **Deposit Account No. 12-2355**.

Respectfully submitted,

LUEDEKA, NEELY & GRAHAM, P.C.

By:



Mark S. Graham

Registration No. 32,355

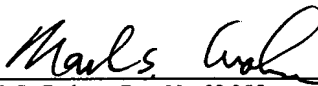
Date: October 30, 2006
P.O. Box 1871
Knoxville, Tennessee 37901
(865) 546-4305

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Mark S. Graham, Reg. No. 32,355